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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,036	01/03/2002	Prabir K. Dutta	OSU1159-159A	1840

8698 7590 02/10/2004

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EXAMINER	
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ART UNIT	PAPER NUMBER
1753	

DATE MAILED: 02/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/040,036	DUTTA ET AL.	
	Examiner	Art Unit	
	Kaj Olsen	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

3. Claims 1, 7, 12 and 16 have been amended to state that the layer is "substantially pure" zeolite. The term "substantially pure" does not appear to have been in the originally filed disclosure, nor is there any discussion in the originally filed disclosure that would be reasonably interpreted as being supportive of this new language. Hence this new term constitutes new matter.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claims 1, 7, 12 and 16 were amended to specify that the zeolite present is substantially pure. The examiner is confused by this new limitation. It would appear based on the applicant's

remarks that this language was added to differentiate from the layer utilized by Clyde that contains metal oxide and alumina in addition to the zeolite. Hence, it would appear that the applicant wishes this new term to read on a layer that consists mainly of zeolite. There are two problems with this. First, that is not what a reasonable reading of these claims would interpret this limitation as claiming. These claims literately are stating that the zeolite utilized for the layer is substantially pure. This limitation does not state that the layer can consist of only zeolite (or mainly zeolite) because the claim is constructed with *open* language (i.e. the layer is *comprising* zeolite). Hence the claims do not exclude other components from being in the claim (e.g. metal oxides or alumina). Second, it is unclear what one possessing ordinary skill in the art would reasonably construe as being substantially pure. Regardless of whether one possessing ordinary skill in the art interpreted this limitation like the applicants apparently wish the claims to be interpreted or how they would literately be interpreted (see discussion above), it still would unclear what the metes of bounds of "substantially pure" would be. Absent any specific discussion in the specification of what a substantially pure zeolite (or zeolite layer) would be (see the new matter rejections above), one possessing ordinary skill in the art could not reasonably determine whether they were infringing on the instant invention.

7. For the purpose of this examination, the examiner will interpret "substantially pure" as reading both as the term literately means and as it appears the applicant wishes the term to be interpreted.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-17 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Szabo et al.

10. The Szabo article anticipates all the limitations of the originally filed claims. See pages 1-6. This article is a proper reference because its authorship is not identical with the application's inventive entity. See MPEP 715.01 (c). With respect to the new limitation requiring the zeolite to be "substantially pure", the layer appears to consist entirely of zeolite which would read on applicant's apparently desired reading of "substantially pure" as near as the examiner can ascertain (see 112 second paragraph rejection above). Interpreting "substantially pure" as it literally means, commercially available zeolite (see section 2.1 on p. 2) would presumably be substantially pure. Alternatively, one possessing ordinary skill in the art would have been motivated to utilize "substantially pure" zeolite because pure materials would have improved performance over impure materials.

11. Claims 12 and 14-17 are rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Clyde et al 6,468,407.

12. Clyde discloses a sensor element having an yttria stabilized zirconia solid electrolyte 42 with electrodes 20 and 22 made of Pt, Au. A layer comprising Y- zeolite covers electrode 20. See col. 3, line 46 to col. 5, line 56. As for claim 17, note that porous layer 40/32 serves to protect the electrodes and the electrolyte. With respect to the new limitation requiring the zeolite to be "substantially pure", the zeolite utilized by Clyde (see example 1 in col. 6) would presumably be substantially pure as that phrase would literally be interpreted. Alternatively, one possessing ordinary skill in the art would have been motivated to utilize "substantially pure" zeolite because pure materials would have improved performance over impure materials.

13. Claims 1, 2, 4, 5, 7-10, 12-15 and 17 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yokota et al (USP 6,254,749). Yokota is being cited for the first time with this office action. This rejection is being introduced in view of the applicant's amendment (and apparently desired interpretation of that amendment) requiring the zeolite to be "substantially pure".

14. Yokota discloses a tube 53 having an end, interior and exterior (fig. 10). Yokota further discloses a sensor functioning as a cap that closes off an end of the tube. Said cap is an yttria-stabilized zirconia 11 (col. 6, lines 54-60) and possesses first and second electrodes (13, 12) on the exterior and interior surfaces. See fig. 10 and col. 12, lines 16-44. Yokota also discloses placing a layer of zeolite over the first electrode (see paragraph bridging col. 10 and 11). With respect to the zeolite being "substantially pure", because Yokota does not disclose any other materials for the layer in conjunction with the zeolite, one could reasonably infer that the zeolite is the only component that needs to be present for the layer and would hence read on applicant's apparently desired reading of the phrase "substantially pure". Alternatively, one possessing

ordinary skill in the art would have been motivated to utilize "substantially pure" zeolite because pure materials would have improved performance over impure materials.

15. With respect to the potentiometer, fig. 15 shows the use of potentiometric measurements, which inherently would require a potentiometer.

16. With respect to the shielding of the electrodes from direct contact with the exhaust gas, see fig. 13 and col. 13, lines 5-45.

Claim Rejections - 35 USC § 103

17. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

18. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota in view of Bannister et al (USP 4,193,857).

19. Yokota discloses all the limitations of the claim, but did not explicitly recite what the tube 53 should be made of. However, the use of alumina for various structures in gas sensors is well known in the art. In particular, Bannister discloses in an alternate gas sensor that the various non-electrolyte portions of the sensors (including the tube utilized to seal the sensor) can be made of alumina. See col. 5, lines 49-52 and col. 9, lines 48-58. Alumina provides a material that is cheaper than zirconia, is stable in high exhaust temperatures, and has a thermal expansion coefficient that is similar to zirconia. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Bannister for the sensor of Yokota because alumina is a conventional material utilized in conjunction with electrolyte

sensors because it is cheap, stable at high temperature, and has a coefficient of expansion similar to that of zirconia.

20. Claims 6, 11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota in view of Clyde.

21. Yokota set forth all the limitations of the claim, but did not explicitly recite the use of zeolite Y. Clyde also taught the use of zeolite containing layers and explicitly taught of the use of a zeolite Y. See col. 5, lines 38-56. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Clyde for the sensor of Yokota because the use of a Y-type zeolite was already recognized by the prior art and the substitution of one known form of zeolite for another requires only routine skill in the art.

22. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clyde in view of Gao (USP 6,551,497).

23. This claim differs by calling for a potentiometer in an electrical circuit for the sensor element that includes a source of electrical potential to be supplied between the electrodes. Clyde at col. 3, last two lines, suggests that the electrodes are provided with a potential source. Gao discloses a solid electrolyte sensor with an electrical circuit that includes both a potential source 35 and a potential measuring means 36. See figures 3(A) and (B); col. 4, lines 52-56 and col. 5, lines 49-67. It would have been obvious for Clyde to adopt a potentiometer, which is a conventional potential measuring means, in its measuring circuit in view of Gao, since it is clearly desirable to know and control at all times the potential between the electrodes.

24. Claims 7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clyde in view of Kurosawa et al (USP 5,897,759).

25. These claims differ from Clyde by calling for the solid electrolyte to be in the form of a tube. Kurosawa discloses a sensor whose solid electrolyte can be in the form of a tube (figure 1) or a planar substrate (figure 3). See col. 4, line 50 to col. 5, line 37. Note particularly col. 5, lines 34-35, where the patent teaches both forms to be conventional. It would have been obvious for Clyde to adopt the tubular form for its electrolyte in view of Kurosawa. One advantage of the tubular configuration is the inherent provision of an inside and an outside for the sensor element without further structure, whereby a sample gas can be isolated from a reference gas. An advantage of the planar configuration is the ease of manufacturing and miniaturization. The two electrolyte forms are art-recognized equivalents. Selecting one over the other is a matter of design choice to suit the particular requirements of the Sensor.

26. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clyde in view of Kurosawa and Gao.

27. This claim further differs by calling for a potentiometer. As discussed before, Gao rendered that feature obvious.

Response to Arguments

28. Applicant's arguments filed 11-20-2004 have been fully considered but they are not persuasive. The examiner has withdrawn the previous provisional double patenting rejection because this examiner does not believe the claims of the instant invention significantly overlap the claims of the 10/061,116 application. The examiner has also withdrawn the rejection of claims 1-6 utilizing Clyde as a primary teaching. The other rejections have been maintained, as well as new rejections necessitated by the applicant's amendment.

29. Applicant urges that Szabo does not qualify as prior art under 35 U.S.C. 102(b). This is correct, but the previous examiner's reference to "b" was clearly a typo as is evident if the previous 102 rejection is read in its entirety. First, the examiner cited the "a" portion of the 35 U.S.C. 102 statute even though the rejection listed "b". Second, the examiner referred to how the authorship is not identical to the inventorship of the instant invention. The issue of authorship is only relevant for a 102(a) rejection (see MPEP 715.01, which the previous examiner referred the applicant to). The 102(b) statute is indifferent to authorship. Why would the previous examiner include a discussion of authorship when authorship is irrelevant to a 102(b) rejection? Finally, even if the applicant did not recognize that the previous examiner mistyped a character, the applicant should have commented on the fact that this reference appears to anticipate all of the instant invention, was published sometime in 2001 which predates instant invention, and lists authorship that differs from the inventorship of the instant invention. The applicant did not and the rejection is being maintained.

30. With respect to the rejection based on Clyde, applicant urges that Clyde does not teach the use of "substantially pure" zeolite. The applicant would be correct if the examiner restricted himself to the interpretation of that limitation that the applicant desires, and if that new limitation were clearly understood (see 112 rejections above). However, the new limitation *literally* does not read on what the applicant appears to wish it to read on, and these rejections are being maintained because it reads (or is obvious over) what Clyde already taught. The applicant's traversal of the other rejections utilizing Clyde appear to based on the applicant's perceived failings of the teaching of Clyde and the language "substantially pure". Because the examiner

does not believe Clyde fails to read or render obvious the new limitation, these other arguments are also unpersuasive.

Conclusion

31. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 7:00 AM-4:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Mr. Nam Nguyen, can be reached at (571) 272-1342.

When filing a fax in Group 1700, please indicate in the header "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of this application. This will expedite processing of your papers. The fax number for all official communications is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (571) 272-1300.

Kaj K. Olsen
Primary Examiner
AU 1753
February 2, 2004